

GB-12-1918

121,225

ROONEY'S COMPLETE SPECIFICATION.

(1 SHEET)

Casing 2 1/2 in. diam.



FIG. 1

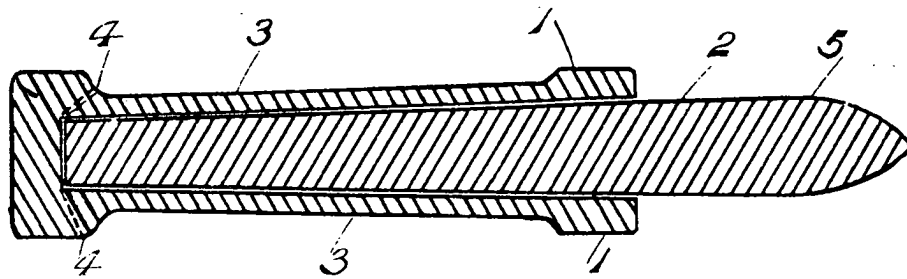
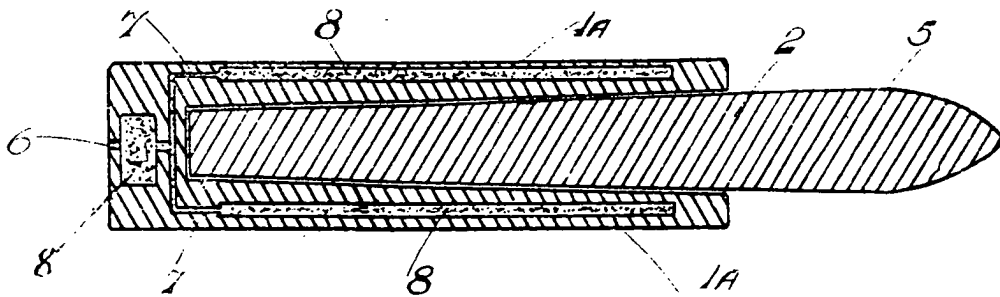


FIG. 2



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base of the outer casing member explosive charges and shrapnel bullets, the said explosive charges being fired by a time fuse or the like.

4. Projectiles constructed and operating substantially as described herein with reference to the drawings.

5 Dated this 12th day of February, 1918.

J. D. ROOTS & Co.,  
Agents for the Applicant,  
Thanet House, Temple Bar, London, W.C. 2.

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Redhill: Printed for His Majesty's Stationery Office, by Love & Malcomson, Ltd.—1918.

Figure 1 is a view with the casing in section embodying one form of my invention.

Figure 2 is a view showing the casing in section embodying a form of my invention for use when it is desired to shatter the outer casing,

Referring to the type of projectile illustrated in Figure 1, the main parts 5 comprise an outer casing 1, wherein an ordinary or high explosive projectile 2 is housed, the outer casing is made suitable to the bore of the gun, and the inner projectile is a free fit in the casing. The middle part of the outside casing is reduced in diameter to lessen the weight, as at 3, and has at its base part small holes 4 penetrating to the bottom of the inner projectile 10 to allow free access of air to prevent a vacuum being formed. The diameters of the outer casing and inner projectile respectively are so proportioned that the front annular area of the outer casing is greater than the cross sectional area of the inner projectile.

In construction it would be an advantage to have the projectile tapering 15 from the crown 5 behind the point to its base to allow it to leave the outer casing 1 with freedom.

The shell illustrated in Figure 2 comprises a casing 1<sup>a</sup>, adapted to house the projectile 2. In this type of shell provision is made to shatter the outside casing after the projectile has been ejected therefrom; for this purpose a time 20 fuse 6, powder trains 7, and explosive charges 8 mixed with shrapnel bullets are employed.

The following remarks are set forth to illustrate the efficiency of my invention.

If a shell 8" in diameter is fired out of a 16" gun under the conditions of 25 my system, the area of the shell being approximately 50 sq. inches, and its casing approximately 201 square inches, it will be readily understood that under the explosive force of 1000 lbs. to the square inch, the 8" shell would be projected from the ordnance under a total force of 201,000 lbs., while if a shell 8" in diameter is fired from the gun under the conditions of the system 30 at present in use, with the same explosive force per square inch as above, the total explosive force would only be 50,000 lbs. therefore a projectile discharged from a gun under the conditions of my system would have four times greater explosive force behind it than if discharged under the conditions at present known. It follows that, if I make my shell considerably longer than the 35 ordinary 8" one, and the shell and its casing is approximately one half the weight of a 16" projectile; with a greater explosive force and the weight of the shell decreased, I procure a considerable increase of duration of flight, and consequently increased range.

I am aware that it has been proposed before to form projectiles of two 40 members, an outer casing and an inner member, which members are adapted to leave each other during flight, examples of which are given in Specifications No. 2283/1871, No. 14,370/1901 and No. 11,493/1915, and I wish it to be understood that I do not claim anything contained in these specifications.

Having now particularly described and ascertained the nature of my said 45 invention, and in what manner the same is to be performed, I declare that what I claim is:—

1. A projectile formed of two members, an outer casing and an inner member, the one adapted to leave the other during flight, characterised by the feature that the outer member is formed as a hollow or cylindrical casing, 50 the bore of which casing is nearly cylindrical and the second member is adapted to fit throughout its length.

2. An improved projectile as claimed in Claim 1, having in the walls and base of the outer casing member explosive charges which may be fired by a time fuse or the like.

3. An improved projectile as claimed in Claim 1 having in the walls and 55

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PATENT



SPECIFICATION

*Application Date, Feb. 12, 1918. No. 2522/18.*

*Complete Accepted, Dec. 12, 1918.*

## COMPLETE SPECIFICATION.

**Improvements in Shells used in Warfare.**

I, JOHN WILLIAM ROONEY, Painter, of 40, Dowling Street, Dunedin, in the Dominion of New Zealand, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

5 This invention relates to high explosive shells used in warfare.

The object of my invention is to effect certain improvements in the known type of projectile which is formed of two members, an outer casing member and an inner or shell member, which members are discharged from the gun together, but are adapted to become separated during flight.

10 In my invention, the said outer member is formed as a cylindrical casing bored or hollow throughout its length with the exception of the base or closure at the rear of this member, and the inner member or projectile is adapted to fit the whole length of the bore of the said hollow casing. My invention further consists in providing means for shattering the outer or casing member  
15 during its flight, by placing explosives in cavities formed in the cylindrical walls of the casing member, such explosives being also used if desired to separate the members.

The projectile and its casing as it leaves the muzzle are both opposed by air pressure, and as air pressure is the main resistance to the flight of projectiles,  
20 the casing member, on account of having a greater area exposed to the air pressure, is checked more rapidly in its flight than the shell, which, being of a lesser area, leaves the casing during its flight. The force of the explosion in the gun operates on the casing which has an area equal to the base of an ordinary shell, and during the flight of the shell, by reason of the loss of its  
25 outside casing, the weight of the projectile continuing in flight is reduced approximately to half that of an ordinary shell. Thus, during the latter part of the flight, the projectile has the velocity of a larger shell, and because of its smaller diameter, the air resistance of a small shell. This gives a much greater range than if the smaller projectile were discharged from a gun of its  
30 own calibre.

An explosive charge which may be set with a time fuse is placed within the walls of the outer containing shell, so that at the required time, after the inner shell has left the casing the charge may be exploded shattering the outer casing.

35 In the drawings accompanying this specification:—

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